Space Weather Forecast

Issued on Thursday, 25 January 2024 at 01:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: CME (Coronal Mass Ejection) arrivals possible later 25 January into early 26 January, with Minor to Moderate geomagnetic storming likely. Moderate solar activity likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with numerous Moderate-class flares from the two large regions, peaking with a M2.6 at 24/0140 UTC. There are currently seven sunspots on the visible disc. The two large regions are also most complex, both showing delta regions, though both also displaying some minor decay in areal extent recently. The southernmost large region has a separate spot in close proximity to the north, linked magnetically and also displaying it's own delta magnetic configuration. The remaining spot regions are small and simple at present.

There have been several coronal mass ejections emerge in the last 24 hours, most of which have been modelled to be missing Earth. Close monitoring and reanalysis of any CME continues when imagery allows.

Solar Wind / Geomagnetic Activity: Solar winds have been at mostly slightly elevated levels on a gradual downward trend. Total magnetic field strength has been weak to moderate with a decreasing trend. Bz has varied mostly weakly, again with a weakening trend. Geomagnetic activity was initially Active (Kp 4) at 24/0000-0300UTC, then became predominantly Quiet to Unsettled (Kp 0-3), with a reducing trend.

Energetic Particles / Solar Radiation: Although no solar radiation storms were observed, radiation levels were marginally elevated at first, but declined to background over the 24 hour period.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely throughout from the two more active regions on the disc. There is also a slight chance of Strong flares.

Solar Wind / Geomagnetic Activity: There is potential for at least three coronal mass ejection glancing blows in the coming days. In addition, these coronal mass ejections are all expected at a similar time - from later on day 1 (25 Jan) to early on day 2 (26 Jan), with the possibility that they either combine or arrive one after the other, perhaps increasing any geomagnetic effects.

Geomagnetic activity is expected to be mostly Quiet to Unsettled initially, with an increase expected later day 1 into day 2, perhaps step-wise if the various coronal mass ejections arrive separately, with G1-G2/Minor-Moderate Storms likely and a slight chance of G3/Strong Storms. Geomagnetic activity should then gradually return to Quiet levels by day 4 (28 Jan) after any residual coronal mass ejection effects have waned.

Energetic Particles / Solar Radiation: There is a slight chance of S1/Minor radiation storms through the period due to the two complex regions on the disc.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	50	70	20	5
Strong	G3	No	5	15	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.